160

Correlation between Tei index and E/Ea ratio in patients with first acute myocardial infarction

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Purpose: Tei index has been proposed as a non invasive and simple index that enables the evaluation of global left ventricular (LV) function. We hypothesized that left ventricular function, expressed by the Tei index, allow non invasive estimation of impaired hemodynamic during acute myocardial infarction (AMI).

Methods: We studied 72 patients with a first AMI. Measurements of Doppler echocardiographic parameters from mitral inflow were performed during the first 48 hours after admission. Mitral annulus Doppler tissue velocities were measured from septal and lateral wall. E/Ea ratio was calculated. Tei index was obtained as: (a – b)/b, where (a) is the interval between the cessation and onset of mitral flow and (b) is the ejection time by aortic flow by pulsed Doppler echocardiography. Aortic Pre-ejectionel period (PEP) was measured and Aortic PEP/ET (ejection time) ratio were also calculated. The left ventricular diastolic pressure was measured during the coronary angiography.

Results: Tei index had a negative correlation with the peak systolic myocardial velocities (r=–0,36, p=0,002). Tei index and Aortic PEP/ ET ratio showed also significant correlation both with E/Ea ratio (r=0.33, p =0.005 and r=0.28, p=0.01 respectively).

Patients with high left ventricular diastolic pressure have a Tei index significantly higher than patients with normal left ventricular diastolic pressure (0,52 ±0,21 vs 0,41±0,23, p= 0,05).

Conclusions: Tei index allows not only the estimation of left ventricular systolic function but also show an approximate estimation of left ventricular diastolic pressure in patients with AMI.

161

Left atrial area index over late diastolic mitral annulus velocity is a useful echo index to identify diastolic dysfunction in patients with acute myocardial infarction

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Background: Combined interpretation of late diastolic mitral annulus velocity (Aa) with left atrial area may have additional benefits in the assessment of diastolic dysfunction. The purpose of the study was to demonstrate a correlation between the LA area /Aa ratio and classical echocardiographic parameters analyzing the diastolic function in patients with a first acute myocardial infarction and may be useful in the identifying diastolic dysfunction and predicting clinical outcomes.

Methods: We enrolled 72 consecutive patients hospitalized for a first acute myocardial infarction and performed transthoracic Doppler echocardiography during the first 48 hours after chest pain onset.

LA area/Aa ratio was evaluated in terms of diagnosing diastolic dysfunction and predicting clinical outcomes.

Results: There is a correlation between LA area/Aa ratio and many classical echocardiographic parameters analyzing the diastolic function (Table 1). During follow-up, the group with LA area/Aa ≥0,4 had a higher incidence of primary composite outcomes (cardiac death and/or rehospitalization for heart failure) than the group with LA area /Aa <0,4 (33% vs 1.6%, P<0.001).

Conclusions: As a new echo index, LA area/Aa is a useful parameter to identify advanced diastolic dysfunction and predict clinical outcomes in patients with a first acute myocardial infarction.

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Table 1 – Correlation between LA area /Aa ratio and Em/Am ratio, Deceleration time of the mitral inflow, Ea/Aa ratio, systolic pulmonary artery pressure and Em/Aa ratio

		Em/Am	Deceleration time	Em/ Ea	Ea/Aa	Systolic pulmonary artery pressure
LA area / Aa ratio	R value	0.7	–0.26	0.36	0.27	0.3
LA area / Aa ratio	P value	< 0.001	0.02	0.002	0.02	0.01

162

Effect of age and gender on left atrial morphology and function

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Aims: Changes of left atrial function are generally due to modifications in left ventricle compliance. But the hypothesis that degenerative changes of myocardial tissue could influence left atrial (LA) function is not excluded. This study was designed to assess the effects of normal ageing and sex on left atrial morphology and function.

Methods: Echocardiography was performed in 62 subjects with no evidence of cardiovascular disease. B-mode derived left atrial maximal and minimal surfaces and volumes, were measured. Ejections fractions based on Simpson method was calculated. Peak systolic wave on mid lateral wall of the left atrium was measured in all subjects.

Results: Higher age was positively correlated with increased LA volume, decreased systolicfunction (Sa: r=–0,29; p=0,02). Active emptying duration assessed by the duration of Am or Ap progressively increased with age (Table 1). Paradoxically, Sex didn't influence left atrial dimensions and function.

Conclusions: Ageing is associated with left atrial dilatation and systolic dysfunction even in lack of left ventricle diseases. But overall, left atrial function and morphology are not influenced by sex.

Table 1 – Variation of differents echocardiographic parameters according to the age

	LA Surface (max)	LA Surface (min)	Shortening fraction	LA volume (max)	LA volume (min)	LA ejection fraction	Sa (mid lateral wall)	Am duration	Ap duration
r	0,54	0,47	–0,38	0,52	0,41	–0,22	–0,29	0,44	0,65
p	<0,001	<0,001	0,004	<0,001	<0,001	0,09	0,02	0,001	<0,001

163

Diagnostic value of Doppler transthoracic echocardiography in the estimation of left ventricular filling pressure in patients with severe symptomatic systolic heart failure

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Background: E/Ea is unreliable to estimate pulmonary capillary wedge pressure (PCWP) in decompensated severe systolic HF. Our objective was to test the reliability of E/Ea to predict elevated PCWP in patients with stable severe systolic HF.

Methods and results: We included 130 patients with LVEF<35% and stable HF. They underwent right heart catheterization and TTE with transmi-

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